

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
29 July 2004 (29.07.2004)

PCT

(10) International Publication Number
WO 2004/062800 A1

(51) International Patent Classification⁷: **B01J 35/02, 8/00**

(21) International Application Number:

PCT/US2003/019075

(22) International Filing Date: 18 June 2003 (18.06.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:

60/438,287

6 January 2003 (06.01.2003) US

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(81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

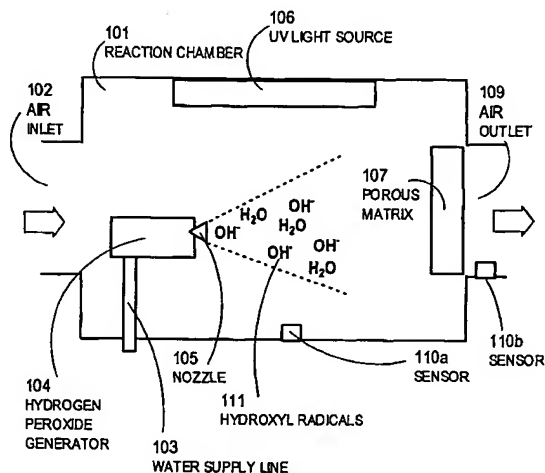
(84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— with international search report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: **HYDROXYL FREE RADICAL-INDUCED DECONTAMINATION OF AIRBORNE SPORES, VIRUSES AND BACTERIA IN A DYNAMIC SYSTEM**



(57) Abstract: A method and apparatus is described for neutralizing airborne pathogens and chemical toxins in ventilated air, and in heating or air conditioning systems. The pathogen-chemical toxin neutralization system is effective against a wide spectrum of pathogens and toxins, it incorporates commercially available components, and it can be readily integrated into commercial HVAC systems where it decontaminates large volumes of ventilated air in real time without any chemical reagents. The system has a flow-through reaction chamber (101) that contains a UV light source (106) that emits short intense flashes of broad-spectrum UV light, a source aqueous hydrogen peroxide that can be a reservoir or a hydrogen peroxide generator (106), and optionally a source of ozone. The interaction of UV light and hydrogen peroxide generates hydroxyl radicals that neutralize pathogens and chemical toxins as they pass through the reaction chamber (101) in real time. The pathogens that can be neutralized by this system include bacteria, viruses, spores, fungi and parasites.